

07-28-06

C97C

PTO/SB/21 (09-04)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	09/786,787
	Filing Date	Sep. 7, 1999
	First Named Inventor	Martin A. Cotton
	Art Unit	2831
	Examiner Name	Kamand Cuneo
Total Number of Pages in This Submission	Attorney Docket Number	8245.016

ENCLOSURES (Check all that apply)		
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Reply to Missing Parts/Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation of POA, Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): PTO Errors
Remarks 1. Transmittal Form (1 page); 2. Request for Certificate of Correction of Patent (2 pages); 3. Certificate of Correction (1 page) in duplicate; 4. Copy of Office Communication, dated 10/03/2001 (15 pages); and 5. Postcard.		

Certificate of Correction
AUG 02 2006

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	DUNLAP, CODDING & ROGERS, P.C.		
Signature			
Printed name	Christopher W. Corbett		
Date	July 27, 2006	Reg. No.	36,109

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below: *** SENT BY EXPRESS MAIL No. EL971032108US, DATED 07/27/06 ***			
Signature			
Typed or printed name	Christopher W. Corbett	Date	July 27, 2006

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

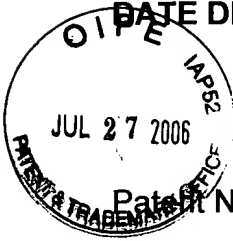
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

AUG 2 2006

EXPRESS MAIL NO.: EL 971032108 US

PATENT

DATE DEPOSITED: July 27, 2006



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Number: US 6,713,685 B1

Issued: March 30, 2004

Name of Patentee: Martin A. Cotton

Title of Invention: NON-CIRCULAR MICRO-VIA

Commissioner for Patents
P.O. Box 1450, Alexandria, VA 22313-1450
Attention: Decision and Certificate of Correction
Branch of the Patent Issue Division

**REQUEST FOR CERTIFICATE OF CORRECTION OF PATENT
FOR PTO AND/OR APPLICANT'S MISTAKES (37 CFR 1.322(a) and 1.323)**

Enclosed are:

- [X] 1 sheet of Form PTO-1050 (Amended), in duplicate, with at least one copy being suitable for printing.
- [X] Pre-addressed Postal Card

PTO ERRORS

The exact page and line number in the application file are:

The following three patents were cited by the Examiner in the Office Communication dated 10/03/2001, (attached as Exhibit A) but these cited references were not included in the "References Cited" when the patent was issued. Therefore, we respectfully request a Certificate of Correction for the following:

AUG 2 2006

On the first page, under "References Cited U.S. Patent Documents": Insert the following references:

5,414,222 A *	5/1995	Sen et al.	174/262
5,522,132 A *	6/1996	Mattei	29/846
5,734,560 A *	3/1998	Kamperman et al.	361/774

☒ No fee is submitted herewith.

APPLICANT'S ERRORS

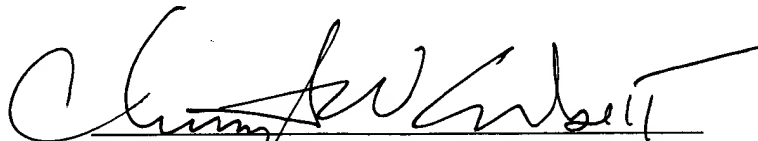
It is noted that errors appear in this patent of a clerical or typographical nature or a minor character as more fully described below. These errors occurred in good faith and correction thereof does not involve such changes in the patent as would constitute new matter or would require re-examination and a certificate of correction is requested.

The exact page and line number where the mistakes occur in the application are:

☐ Charge to credit card as shown on the attached credit card information authorization form PTO-2038, in the amount of \$100.00 for this Certificate of Correction. One copy of this sheet is attached.

RETURN OF CERTIFICATE

Please send the Certificate to the undersigned.



Christopher W. Corbett, Reg. No. 36,109
DUNLAP, CODDING & ROGERS, P.C.
P.O. Box 16370, Customer No. 30589
Oklahoma City, Oklahoma 73113
Telephone: 405/607-8600
Facsimile: 405/607-8686

Agent for Applicant

**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**

PATENT NO : 6,713,685 B1
DATED : 03/30/2004
INVENTOR(S) : Martin A. Cotton

It is certified that error appears in the above-identified patent and that said Letters Patent
is hereby corrected as shown below:

On the first page, under "References Cited U.S. Patent Documents": Insert the following
references:

5,414,222 A * 5/1995 Sen et al. 174/262
5,522,132 A * 6/1996 Mattei 29/846
5,734,560 A * 3/1998 Kamperman et al. 361/774

MAILING ADDRESS OF SENDER: Dunlap, Coddling & Rogers, P.C.
P. O. Box 16370
Oklahoma City, Oklahoma 73113

PATENT NO. 6,713,685 B1
No. of additional copies

SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents,
P.O. Box 1450, Alexandria, VA 22313-1450.

AUG 2 2006

**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**

PATENT NO : 6,713,685 B1
DATED : 03/30/2004
INVENTOR(S) : Martin A. Cotton

It is certified that error appears in the above-identified patent and that said Letters Patent
is hereby corrected as shown below:

On the first page, under "References Cited U.S. Patent Documents": Insert the following
references:

5,414,222 A * 5/1995 Sen et al. 174/262
5,522,132 A * 6/1996 Mattei 29/846
5,734,560 A * 3/1998 Kamperman et al. 361/774

MAILING ADDRESS OF SENDER: Dunlap, Coddling & Rogers, P.C.
P. O. Box 16370
Oklahoma City, Oklahoma 73113

PATENT NO. 6,713,685 B1

No. of additional copies

SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents,
P.O. Box 1450, Alexandria, VA 22313-1450.

AUG 2 2006

"EXHIBIT A"



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/786,787 05/10/01 COTTON

M 2654-005US

EXAMINER

MM91/1003

JON L ROBERTS
ROBERTS ABOKHAIR & MARDULA
11800 SUNRISE VALLEY DRIVE SUITE 1000
RESTON, VA 20191

ART UNIT	PAPER NUMBER
----------	--------------

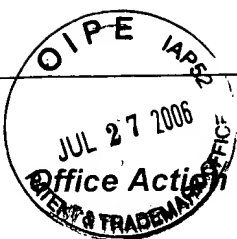
2841
DATE MAILED:

10/03/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

AUG 2 2006



Application No. 09/786,787	Applicant(s) COTTON, MARTIN A.	
	Examiner Quynh-Nhu H. Vu	Art Unit 2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

AUG 2 2006

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the recited feature "the trench having a length greater than two times a breadth of the trench" of claim 2 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the recited feature of claims 3, 13, 16-17 such as "a first wire trace applied to main surface ... a connection between the first and second wire trace terminal landing pads and the plated through hole" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the specification does not support the limitation "the trench having a length greater than two times a breadth of the trench", as recited in claim 2. Likewise, the specification does not support the limitations of claims 3, 13 and 16-17 (i.e. a first wire trace having a first through hole, a printed circuit board first insulation layer formed over the first wire trace having second through hole, a second wire trace applied to the insulation layer having a second terminal landing pad with a third through hole having identical geometry to and vertically aligned with the first and second through holes). Furthermore, please clarify specific section in the specification in which applies to claims 3, 13 and 16-17.

AUG 2 2006

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 9 recites the limitation "the ground plane" in lines 19. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

7. Claims 1, 3-4, 13-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Sen et al. [US 5,414,222].

As to claim 1, Sen et al. disclose in Figs. 2-3F a wiring connection structure for printed circuit board, characterized by: a through-hole (24 in Fig. 2 or Figs. 3A-3F) with a convoluted shaped cross section having an interior wall that vertically extends through and intersects and exposes a plurality of wire circuit traces (21, 31) and a plating of conductive material is inherent applied to the interior wall electrically connecting a plurality of wire exposed circuit traces on a plurality of circuit layers.

It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior

AUG 2 2006

Art Unit: 2841

art apparatus satisfying the claimed structural limitations pertaining to phrase "for interconnecting wiring circuit traces on a plurality of circuit trace layers applied on a plurality of printed circuit board layers and electrically isolated there between by the printed circuit board layers and having a printed circuit board multi-layered structure:. Ex Pane Masham, 2USPQ F.2d 1647 (1987).

As to claims 3-4, 13 and 16, Sen et al. disclose in Figs. 2-3F (also see attachment) a wiring connection structure having a first wire circuit trace (31) having a width applied to a main surface (30) and having a first terminal land pad with a terminal width the same as the width of the first wire trace and having a first through hole with a major and minor diameter where in minor diameter where the minor diameter is less than the width of the first trace and the major diameter is elongated and directional along a direction of the terminal landing pad; a printed circuit board first insulating layer (20) formed over the first wire trace having a second through hole (24) having identical geometry and orientation as and vertically aligned with the first through hole and extending to the first wire trace terminal landing pad; and second wire circuit trace (21) applied to the printed circuit board first insulation layer having a second terminal land pad with a third through hole having identical geometry to and aligned with the first through hole, wherein the first, second and third through holes are adjoining and are plated there through with an electrically conductive material forming a plated through hole vertically intersecting the first and second terminal pads and electrically connecting the first wire trace and the second wire trace by a connection between the first and second landing pads and the through hole.

It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations pertaining to phrase "for interconnecting a plurality of wiring circuit traces applied on a plurality of printed circuit board

AUG 2 2006

Art Unit: 2841

layers and electrically isolated by the printed circuit board layers and having a printed circuit board first layer with a main surface". Ex *Pane Masham*, 2USPQ F.2d 1647 (1987).

As to claims 14-15, *Sen et al.* disclose in Fig. 3 wherein the major diameter is at least about twice / three times that of the minor diameter.

As to claim 17, since the method of manufacturing the device is merely a list of steps of forming, these steps must be performed in order to obtain the device (see rejection of claims 13-15 above). Therefore, the method of manufacturing would be inherent to the shown structure of the device.

8. Claims 2, 9-12, 20-23 are rejected under 35 U.S.C. 102(e) as being anticipated by *Harada et al.* [US 5,966,294].

As to claim 2, *Harada et al.* disclose in Fig. 3 an EMI shielding structure for a printed circuit board comprising: a trench having a rim about an opening of the trench at a top printed circuit board layer and the trench extending through a plurality of printed circuit board layers to a grounding plane (140) exposing the grounding plane and the trench having an interior wall with a conductive plating material applied over the wall; *Harada et al.* clearly show the trench having a length greater than two times a breadth of the trench and the wall vertically extends around the perimeter of the printed circuit board and the plating electrically connects to the exposed ground plane and wraps over and laterally extends from the rim forming a lip.

It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations pertaining to phrase "for shielding wiring circuit traces on a plurality of circuit trace layers applied on a plurality of printed circuit board layers and electrically isolated there between by the printed circuit board layers and

AUG 2 2006

Art Unit: 2841

having a printed circuit board multi layer structure". Ex Pane Masham, 2USPQ F.2d 1647 (1987).

As to claims 9-12, Harada et al. disclose in Fig. 3 a reference plane structure of a printed circuit board comprising: a first wire trace circuit layer (141b, 141c) applied to a main surface; a first printed circuit board-insulating layer formed over the first wire trace circuit layer; a first reference plane (140) applied over the first printed circuit board-insulating layer; a trench having an interior wall and extending about a perimeter encompassing the first wire trace circuit layer and extending through the printed circuit board first layer, extending through and exposing the first wire trace circuit layer; extending through the first insulation layer and extending to the reference plane exposing the reference plane; and a conducting plating layer on the interior wall electrically connecting the first wire traces layer to the ground plane; wherein the perimeter encompasses a portion of the first trace circuit layer (141b, 141c).

It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations pertaining to phrase "for fixing a potential reference for a plurality of wiring circuit trace layers that are electrically isolated there between by a plurality of printed circuit board layers and having a printed circuit board first layer with a main surface". Ex Pane Masham, 2USPQ F.2d 1647 (1987).

As to claim 20, since the method of manufacturing the device is merely a list of steps of forming, these steps must be performed in order to obtain the device (see rejection of claims 2, 9-12 above). Therefore, the method of manufacturing would be inherent to the shown structure of the device.

As to claims 21-22, Harada et al. disclose in Fig. 3 an EMI shielding structure comprising: a printed circuit board having a plurality of wire trace circuit layer (141b, 141c) and a

AUG 2 2006

Art Unit: 2841

plurality of printed circuit board insulation layers there between and having a plurality of printed circuit board edges and a ground plane (140); and a first trench (on the right hand side) having an interior wall and extending in parallel with the board edge within a perimeter defined by the board edge encompassing the printed circuit board wire circuit trace and extending through the printed circuit board layers and extending to the ground plane, exposing the ground plane; and electrically conductive plating material (141a, 141d) applied over the interior wall there through and electrically connecting to the exposed ground plane providing at least a partial perimeter shield for the printed circuit board.

It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations pertaining to phrase "for shielding a plurality of wire circuit trace layers that are electrically isolated by printed circuit board layer". Ex *Pane Masham*, 2USPQ F.2d 1647 (1987).

As to claim 23, a second trench (on the left hand side) having an interior wall and extending wholly within and in parallel with an outer perimeter defined by the first trench and extending through the printed circuit board layers and extending to the ground plane exposing the ground plane; wherein the second interior wall is plated with electrical conductive plating material (141a, 141d) applied over the interior wall there through and electrically connecting to the exposed ground plane.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

AUG 2 2006

Art Unit: 2841

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 3-4 alternatively are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamperman et al. [US 5,734,560] in view of Sen et al.

Kaperman et al. disclose in Figs. 1-2 (also see attachment) a wiring connection structure for a printed circuit board, characterized by: a first wire trace applied to a main surface having a first terminal land pad with a first through hole there through-hole; a printed circuit board first insulation layer formed over the first wire trace having a second through hole of identical cross sectional geometry and vertically aligned with the first through hole and extending to the first terminal landing pad exposing a portion of the first land pad; and a second wire trace applied to the printed circuit board first insulating layer having a second terminal landing pad; wherein the first and second through holes are adjoining and are plated there through with an electrically conductive material forming a plated through hole; wherein the vertically intersects the first and second terminal pads and electrically connects the first wire trace and the second wire trace by a connection between the first and second wire trace terminal landing parts and the plated through hole. Kaperman et al. disclose only two through holes are connected. However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ more than two through holes (i.e. another third through hole having identical geometry with the first and second through holes, as Kaperman et al. taught in col. 1, lines 48-50 or col. 2, lines 47-50) in order to improve surface for mounting electronic device. Kaperman et al. do not disclose the through hole having a convoluted shaped cross section.

Sen et al. disclose in Figs. 3A-F a through hole has a shaped continuous curve cross section. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the through hole having a convoluted shaped cross section, as Sen et al. in order to have a characteristic inductance property.

AUG 2 2006

It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations pertaining to phrase "for interconnecting wiring circuit traces applied on a plurality of printed circuit board layers and electrically isolated by the printed circuit board layers and having a printed circuit board first layer with a main surface". Ex Pane Masham, 2USPQ F.2d 1647 (1987).

11. Claim 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaperman et al. in view of Sen et al. as applied to claims 3-4 above, and further in view of Mattei [US 5,522,132].

Kaperman et al. and Sen et al. disclose all claimed subject matter except for the continuous curved cross section is "U" shaped.

Mattei discloses in Fig. 5 the continuous curved cross section "U" shaped.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the through hole having U shaped, as taught by Mattei, in order to reduce insertion loss and return loss and to improve isolation.

As to claims 6-8, Kamperman et al., Sen et al. and Mattei disclose(s) the claimed subject matter except for the through hole having the "L" shaped/ "+" shaped. It would have been obvious matter of design choice to "L" shaped, "+" shaped, since applicant has not disclose the "U" shaped, "L" shaped, "+" shaped solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with convoluted shaped i.e. "U" shaped.

12. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sen et al.

AUG 2 2006

Sen et al. disclose all claimed subject matter except for plasma ablation/laser method. However, it well known in the art to using the plasma ablation or laser method, as Applicant discloses in the specification on page 2-3.

13. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada et al. in view of Inoue et al. [US 5,270,493].

Harada et al., disclose all claimed subject matter except for an EMC sensitive track of conductive material.

Inoue et al. disclose in Fig. 2 an EMC sensitive track (7) of conductive material extending and parallel with an outer perimeter defined by the first elongated through-hole (8) and disposed between circuit board insulating layer (2, 3) through which the trenched through-hole extends.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the EMC sensitive track, as taught by Inoue et al., for the benefit of reducing an electromagnetic wave.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quynh-Nhu H. Vu whose telephone number is 703-305-0850. The examiner can normally be reached on 7:30-5:00 (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on 703-308-3301. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7724 for regular communications and 703-308-7722 for After Final communications.

AUG 2 2006

Art Unit: 2841

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

QNV
September 28, 2001

A handwritten signature in black ink, consisting of several stylized, overlapping loops and a long, sweeping horizontal stroke at the end.

AUG 2 2006

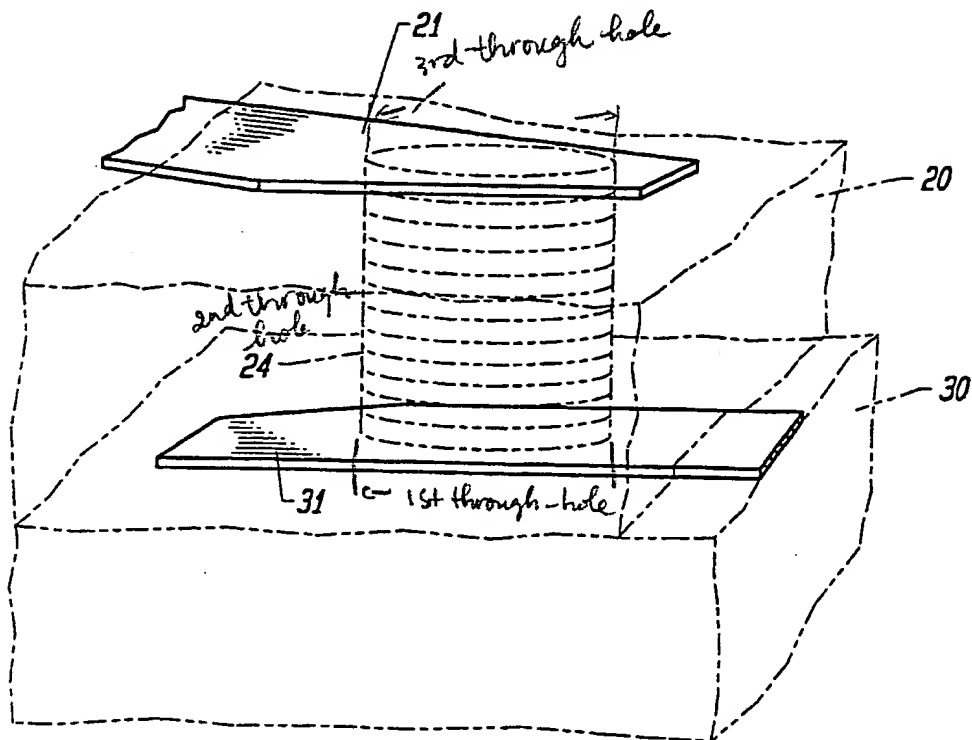


FIG. 2

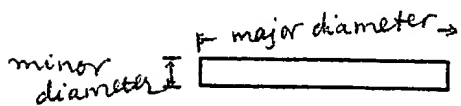


FIG. 3A



FIG. 3D

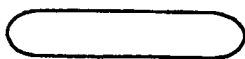


FIG. 3B



FIG. 3E



FIG. 3C



FIG. 3F

AUG 2 2006

FIG. 1

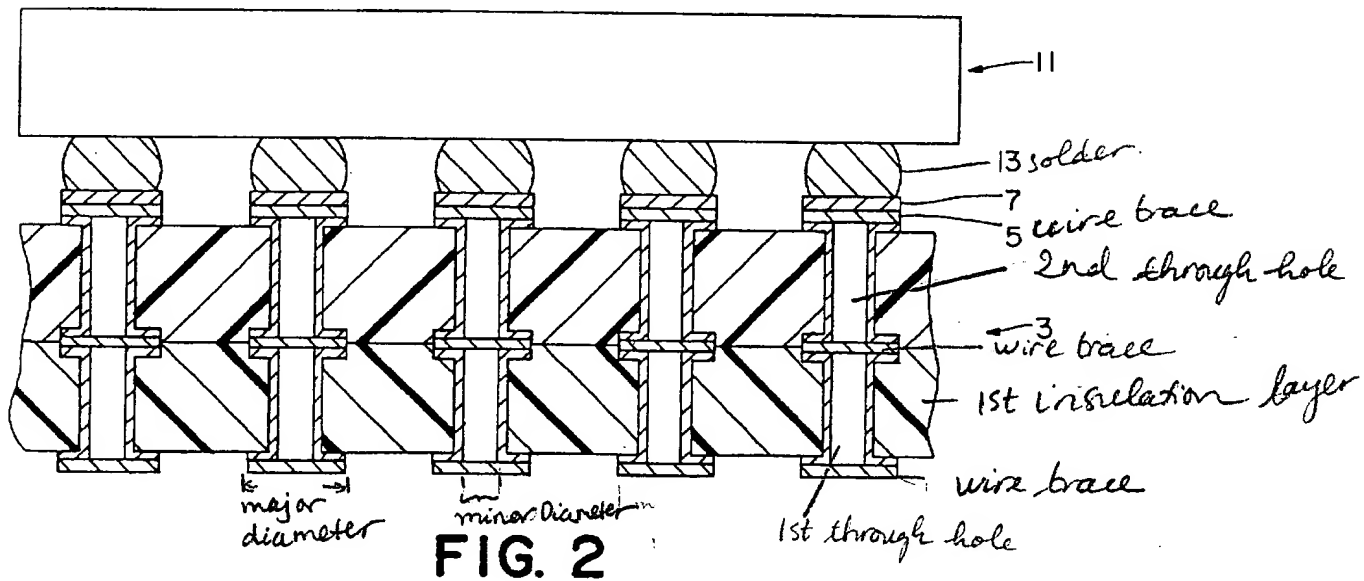
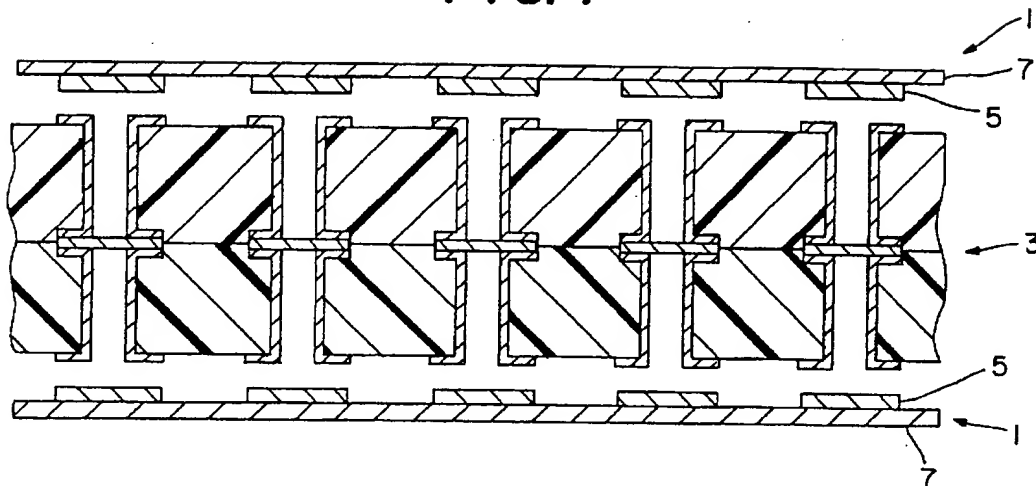


FIG. 2

Notice of References Cited



Application/Control No.

09/786,787

Applicant(s)/Patent Under
Reexamination
COTTON, MARTIN A.

Examiner

Quynh-Nhu H. Vu

Art Unit

2841

Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification	
	A	US-5,270,493	12-1993	Inoue et al.	174	253
	B	US-5,966,294	10-1999	Harada et al.	361	794
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification	
	N						
	O						
	P						
	Q						
	R						
	S						
	T						

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

AUG 2 2006